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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/554,907	07/11/2000	MATS LEIJON	705/72450-2	6641

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EXAMINER	
PEREZ, GUILLERMO	

ART UNIT	PAPER NUMBER
2834	10

DATE MAILED: 11/29/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/554,907	Applicant(s) LEIJON, MATS	
	Examiner Guillermo Perez	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 May 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. PCT/SE98/01733, filed on September 29, 1998.

Drawings

Figure 8 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Specification

This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5-6, 12, 22 and 32-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 recites the limitation "one or more such zones of the magnetic circuit" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 12 recites the limitation "the stator or rotor" in line 2. There is insufficient antecedent basis for this limitation in the claim.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In the present instance, claim 22 recites the broad recitation "a resistivity in the range 10^{-6} Ω cm – 100 k Ω cm", and the claim also recites "suitably 10^{-3} Ω cm, preferably 1-500 Ω cm" which is the narrower statement of the range/limitation.

Also, claim 32 recites the broad recitation "suitably in excess of 10 kV", and the claim also recites "in particular in excess of 36 kV and preferably more than 72,5 kV" which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-4, 8-11, 13-17, 20-24, 29-32, 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Enoksen (U. S. Pat. 4,041,431) in view of Elton et al. (U. S. Pat. 5,036,165).

Enoksen discloses an electromagnetic device (figure 1) comprising at least one magnetic circuit (31A) and at least one electric circuit comprising at least one winding (40), the magnetic (31A) and electric circuits being inductively connected to each other and the device comprising a control arrangement (22) to control operation of the device, wherein the control arrangement (22) is adapted to control frequency, amplitude and/or phase as concerns electric power to/from the device by the control arrangement (22) comprising means (22) for controlling the magnetic flux in the magnetic circuit (31A).

Enoksen discloses that the control means (22) comprises at least one control winding (22) inductively connected to the magnetic circuit (31A). Enoksen discloses that the control arrangement (22) is adapted to control the reluctance in the magnetic circuit (column 6, lines 61-64). Enoksen discloses that the control winding (22) and the winding (40) of the electric circuit are arranged to be passed by substantially the same magnetic flux (31A). Enoksen discloses that the control arrangement (22) is adapted to add a magnetic flux addition to the magnetic flux in the magnetic circuit (figure 1). Enoksen discloses that the winding is wound about a magnetic core (12).

Enoksen discloses that the electric circuit comprises at least two windings (40) coupled in series, that the magnetic circuit (31A) comprises at least two alternative flux paths, that the at least one control winding (22) is adapted to control the magnetic flux

(31A) to pass in any of or both of these flux paths and that the two windings (40) of the electric circuit are located such that one of them is capable of being switched off from magnetic flux by means of the at least one control winding (22). Enoksen discloses that the magnetic circuit (31A) belongs to a transformer having primary and secondary windings (16,18) and that the primary and secondary windings (16,18) and the control winding (22) are arranged to be passed by the same magnetic flux (31A).

Enoksen discloses that the secondary winding (16) of the transformer comprises at least two winding parts (16, 40) coupled in series, that the magnetic circuit (31A) comprises at least two alternative flux paths, that at least two occurring control windings (22) are adapted to control the magnetic flux (31A) to pass in one or both of these paths and that the two winding parts (16,40) of the secondary winding (16) are placed such that one of them is capable of being switched off from magnetic flux by means of the control windings (22). Enoksen discloses that the device comprises a magnetic core (12) having at least three legs (15,17,19,20) coupled in parallel and that two of these legs (19,20) belong to different flux paths whereas the third (15) is common to the two flux paths.

However, Enoksen does not disclose that the at least one winding or at least a part thereof comprises at least one electric conductor having an insulation system comprising an electric insulation formed by a solid insulation material and interiorly thereof an inner layer the at least one electric conductor is arranged interiorly of the inner layer and that the inner layer has an electrical conductivity which is lower than the conductivity of the electric conductor but sufficient to cause the inner layer to operate for

equalization as concerns the electrical field exteriorly of the inner layer. Enoksen does not disclose that the insulation system exteriorly of the insulation comprises an outer layer which has an electrical conductivity which is higher than that of the insulation to make the outer layer capable, by connection to earth or otherwise a relatively low potential, of operating to equalize potential.

Enoksen does not disclose that the outer layer is arranged to substantially enclose the electric field, arising as a consequence of the electrical conductor, inwardly of the outer layer. Enoksen does not disclose that the inner and/or outer layer comprises a semiconducting material. Enoksen does not disclose that the conductor and its insulation system constitutes a winding formed by means of a flexible cable. Enoksen does not disclose that the inner layer is in electric contact with the at least one electric conductor. Enoksen does not disclose that the at least one electric conductor comprises a number of strands and that at least one strand of the electric conductor is at least in part uninsulated and arranged in electric contact with the internal layer.

Elton et al. disclose that the at least one winding or at least a part thereof comprises at least one electric conductor (102) having an insulation system comprising an electric insulation formed by a solid insulation material (106) and interiorly thereof an inner layer (104) the at least one electric conductor (102) is arranged interiorly of the inner layer (104) and that the inner layer (104) has an electrical conductivity which is lower than the conductivity of the electric conductor (102) but sufficient to cause the inner layer (104) to operate for equalization as concerns the electrical field exteriorly of the inner layer (104). Elton et al. disclose that the insulation system exteriorly of the

insulation comprises an outer layer (110) which has an electrical conductivity which is higher than that of the insulation (106) to make the outer layer (110) capable, by connection to earth (114) or otherwise a relatively low potential, of operating to equalize potential.

Elton et al. disclose that the outer layer (110) is arranged to substantially enclose the electric field, arising as a consequence of the electrical conductor (102), inwardly of the outer layer (110). Elton et al. disclose that the inner (104) and/or outer layer (110) comprises a semiconducting material. Elton et al. disclose that the conductor (102) and its insulation system constitutes a winding formed by means of a flexible cable (100). Elton et al. disclose that the inner layer (104) is in electric contact with the at least one electric conductor (102). Elton et al. disclose that the at least one electric conductor (102) comprises a number of strands and that at least one strand of the electric conductor (102) is at least in part uninsulated and arranged in electric contact with the internal layer (104). The invention of Elton et al. has the purpose of avoiding the development of a corona discharge when an electrical potential exists between the conductor and the region adjacent the exterior surface of the insulator.

It would have been obvious at the time the invention was made to modify the electromagnetic device of Enoksen and provide it with the cable disclosed by Elton et al. for the purpose of avoiding the development of a corona discharge when an electrical potential exists between the conductor and the region adjacent the exterior surface of the insulator.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the conductors in a reactor since the examiner takes Official Notice of the use of electrical conductors for their use in the electromagnetic devices art and the selection of any of these known conductors to conduct electricity in a reactor would be within the level of ordinary skill in the art.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to choose the insulation resistivity according to the environment since it has been held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller,* 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to choose polymeric materials for the insulation since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

2. Claims 5-6, 12, 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Enoksen in view of Elton et al. as applied to claim 1 above, and further in view of Olsson (U. S. Pat. 5,084,663).

Enoksen and Elton et al. disclose an electromagnetic device as described on item 1 above. However, neither Enoksen nor Elton et al. disclose material having a permeability greater than 1 is included in the magnetic circuit and that the control arrangement is adapted to control the reluctance in the magnetic circuit by varying the

permeability of one or more such zones of the magnetic circuit which have variable permeability. Neither Enoksen nor Elton et al. disclose that the zone or zones have a variable permeability comprise one or more gaps in the magnetic circuit. Neither Enoksen nor Elton et al. disclose that the magnetic circuit is arranged in the stator or rotor of a rotating electric machine. Neither Enoksen nor Elton et al. disclose that the magnetic circuit comprises one or more magnetic cores having slots for the winding. Neither Enoksen nor Elton et al. disclose that the device is constituted of a generator, motor or synchronous compensator.

Olsson discloses material (air) having a permeability greater than 1 is included in the magnetic circuit and that the control arrangement is adapted to control the reluctance in the magnetic circuit by varying the permeability of one or more such zones (16a,16b) of the magnetic circuit which have variable permeability. Olsson discloses that the zone or zones having a variable permeability comprise one or more gaps in the magnetic circuit (figure 1). Olsson discloses that the magnetic circuit is arranged in the stator or rotor (15) of a rotating electric machine. Olsson discloses that the magnetic circuit comprises one or more magnetic cores having slots for the winding (13,14). Olsson discloses that the device is constituted of a generator, motor or synchronous compensator. Olsson's invention has the purpose of activating the stator winding before the position sensor indicates the alignment of the stator with the rotor.

It would have been obvious at the time the invention was made to modify the electromagnetic device of Enoksen and Elton et al. and provide it with the zones of

variable permeability disclosed by Olsson for the purpose of activating the stator winding before the position sensor indicates the alignment of the stator with the rotor.

3. Claims 7, 12 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Enoksen in view of Elton et al. as applied to claim 1 above, and further in view of Flick (U. S. Pat. 4,164,672).

Enoksen and Elton et al. disclose an electromagnetic device as described on item 1 above. However, neither Enoksen nor Elton et al. disclose that the magnetic circuit is without magnetic core. Neither Enoksen nor Elton et al. disclose that the device is directly connected to a power network for high voltage, suitably 36 kV and more, without intermediate transformer.

Flick discloses that the magnetic circuit is without magnetic core. Flick discloses that the device is directly connected to a power network for high voltage, suitably 36 kV and more, without intermediate transformer (column 6, lines 51-55). Flick's invention has the purpose of creating a machine capable of being connected to a power network without a transformer.

It would have been obvious at the time the invention was made to modify the electromagnetic device of Enoksen and Elton et al. and provide it with the magnetic circuit and connection disclosed by Flick for the purpose of creating a machine capable of being connected to a power network without a transformer.

4. Claims 18-19, 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Enoksen in view of Elton et al. as applied to claim 1 above, and further in view of Penczynski et al. (U. S. Pat. 3,959,549).

Enoksen and Elton et al. disclose an electromagnetic device as described on item 1 above. However, neither Enoksen nor Elton et al. disclose that the inner layer, the outer layer and the solid insulation present substantially equal thermal properties. Neither Enoksen nor Elton et al. disclose that the solid insulation and the inner layer and/or the outer layer are formed by materials having substantially equal E-modulus. Neither Enoksen nor Elton et al. disclose that the inner layer and/or the outer layer and the solid insulation are formed by materials presenting substantially equal thermal coefficients of expansion.

Penczynski et al. disclose that the inner layer, the outer layer and the solid insulation present substantially equal thermal properties. Penczynski et al. disclose that the solid insulation and the inner layer and/or the outer layer are formed by materials having substantially equal E-modulus. Penczynski et al. disclose that the inner layer and/or the outer layer and the solid insulation are formed by materials presenting substantially equal thermal coefficients of expansion (column 4, lines 37-40). The invention of Penczynski et al. has the purpose of improving the mechanical elasticity of the insulation.

It would have been obvious at the time the invention was made to modify the electromagnetic device of Enoksen and Elton et al. and provide it with the thermal properties for insulation disclosed by Penczynski et al. for the purpose of improving the mechanical elasticity of the insulation.

5. Claims 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Enoksen in view of Elton et al. as applied to claim 1 above, and further in view of Breitenbach et al. (U.S. Pat. No. 4,785,138).

Enoksen and Elton et al. disclose an electromagnetic device as described on item 1 above. However, neither Enoksen nor Elton et al. disclose that the inner layer and/or the outer layer and the solid insulation are rigidly connected to each other over substantially the entire interface to ensure adherence also on flexing and temperature change. Neither Enoksen nor Elton et al. disclose that the solid insulation and the inner layer and/or the outer layer are formed by materials having a high elasticity to maintain mutual adherence on strains during operation.

Breitenbach et al. disclose that the inner layer and/or the outer layer and the solid insulation are rigidly connected to each other over substantially the entire interface to ensure adherence also on flexing and temperature change. Breitenbach et al. disclose that the solid insulation and the inner layer and/or the outer layer are formed by materials having a high elasticity to maintain mutual adherence on strains during operation (column 4, lines 24 to 28). The invention of Breitenbach et al. has the purpose of minimizing thermal aging and avoiding detaching of the layer from the conductor due to bending or axial stress.

It would have been obvious at the time the invention was made to modify the electromagnetic device of Enoksen and Elton et al. and provide it with the insulation strength disclosed by Breitenbach et al. for the purpose of minimizing thermal aging and avoiding detaching of the layer from the conductor due to bending or axial stress.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Perez whose telephone number is (703) 306-5443. The examiner can normally be reached on Monday through Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308 1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3432 for regular communications and (703) 305 3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

Guillermo Perez
September 4, 2001

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